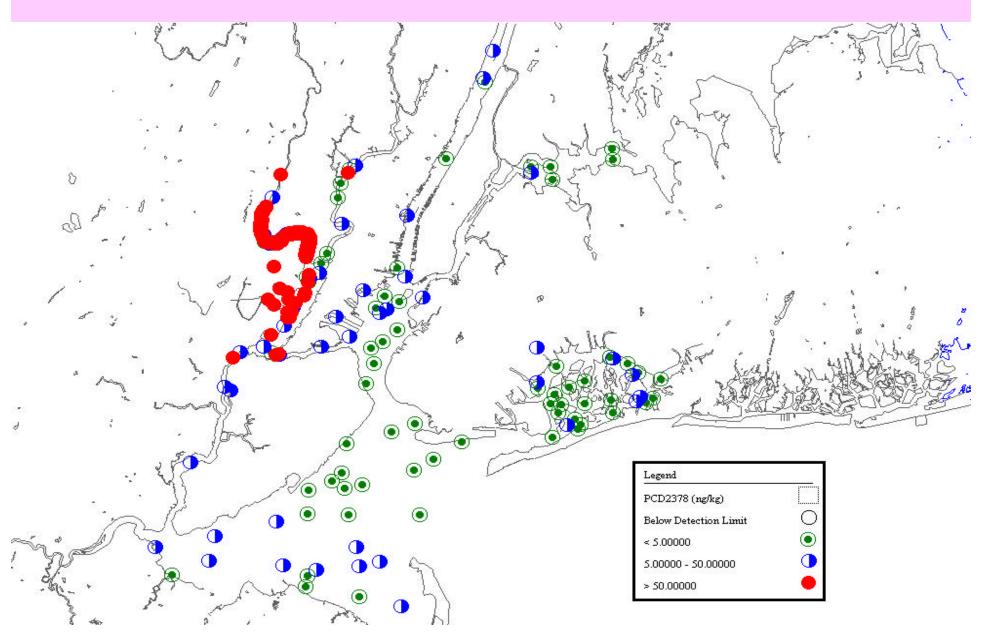
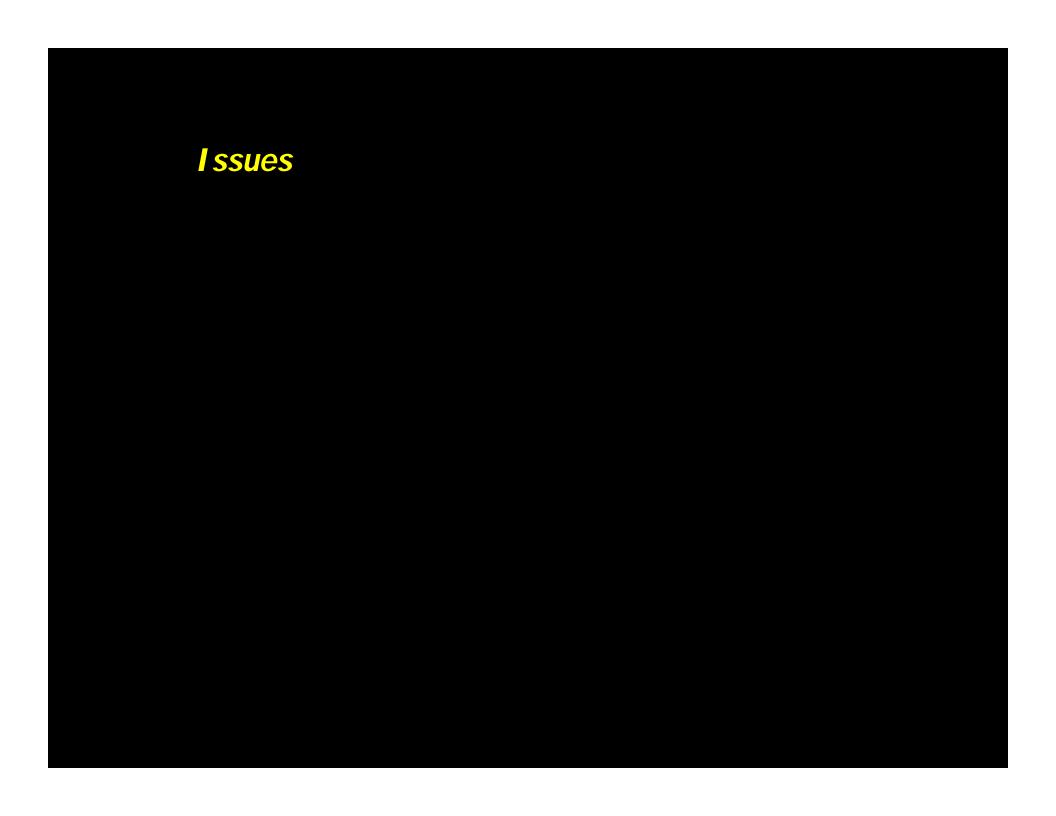
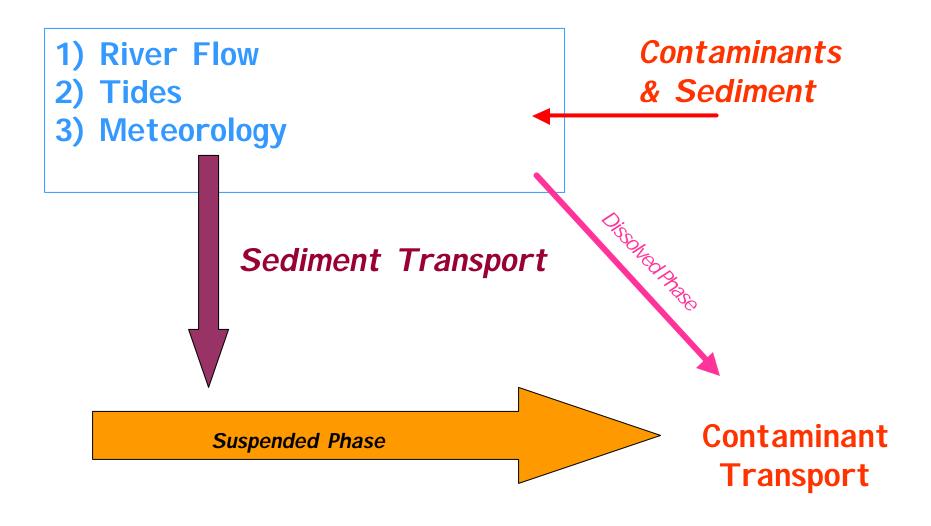


2,3,7,8-TCDD in Surface Sediments





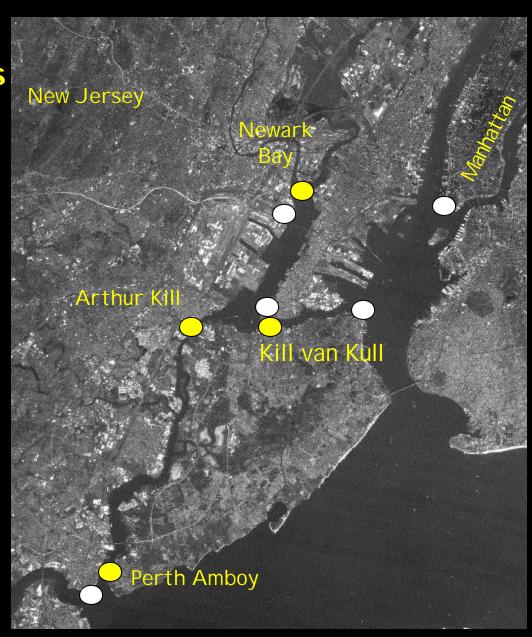
Estuarine Dynamics

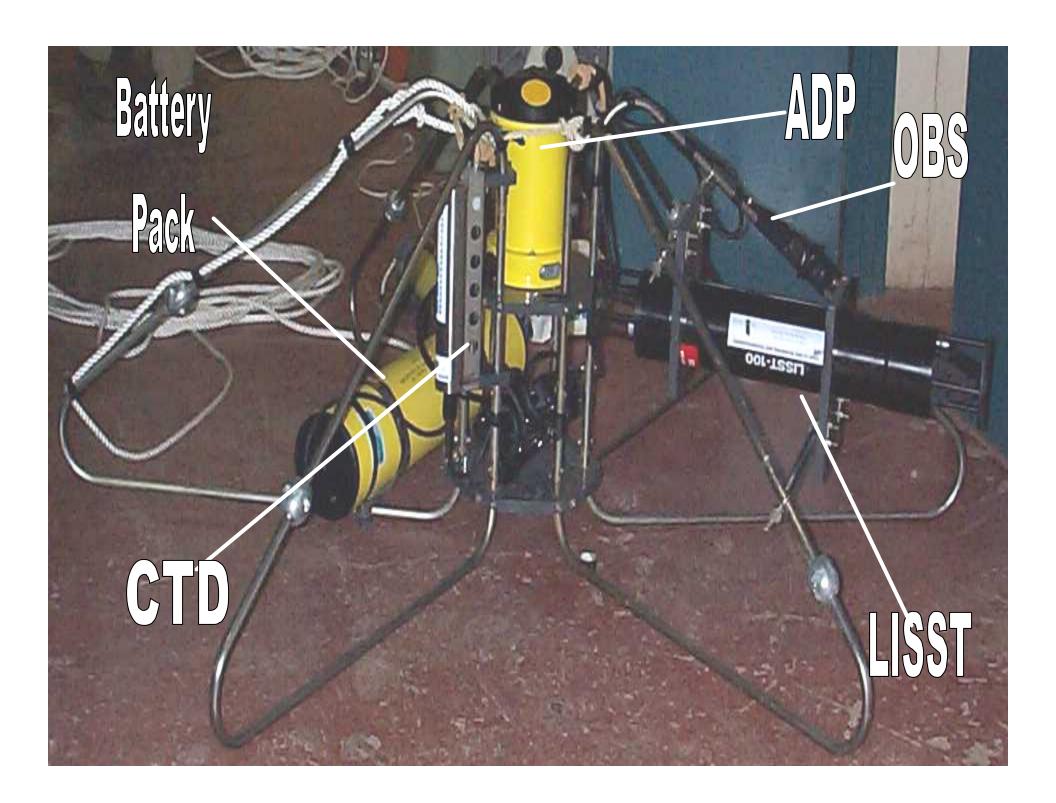


Study Site

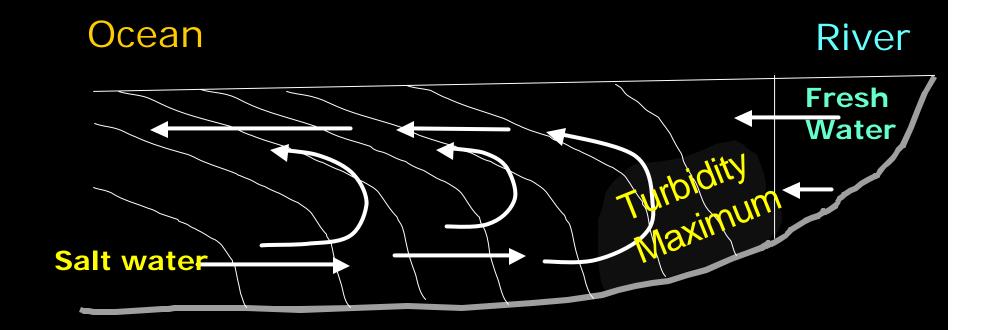
- Mooring Locations
- Tide Gauges

Moorings: ADP's, C-T, Pressure, OBS LISST





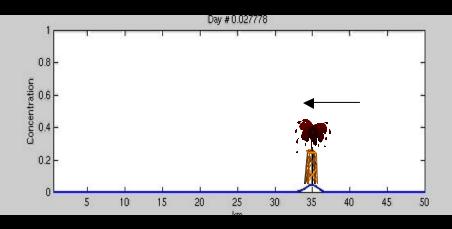
Density Driven Circulation

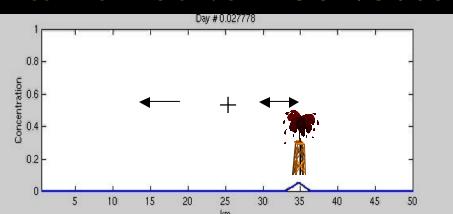


In estuaries heavy salty sea-water slumps underneath the lighter seaward-flowing riverine water. This results in converging near bottom flows that accumulate suspended material near the head of the salt wedge.

Effects of Currents and the Location of a Source of Contaminants

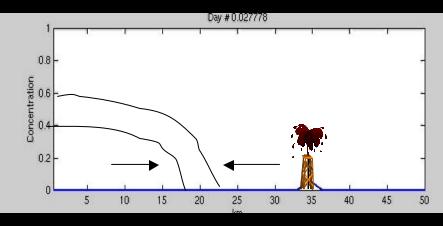
Run1 Steady Flow (10 cm/s) Run2
mean flow 10 cm/s + 75 cm/s tide

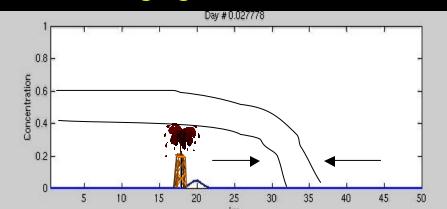


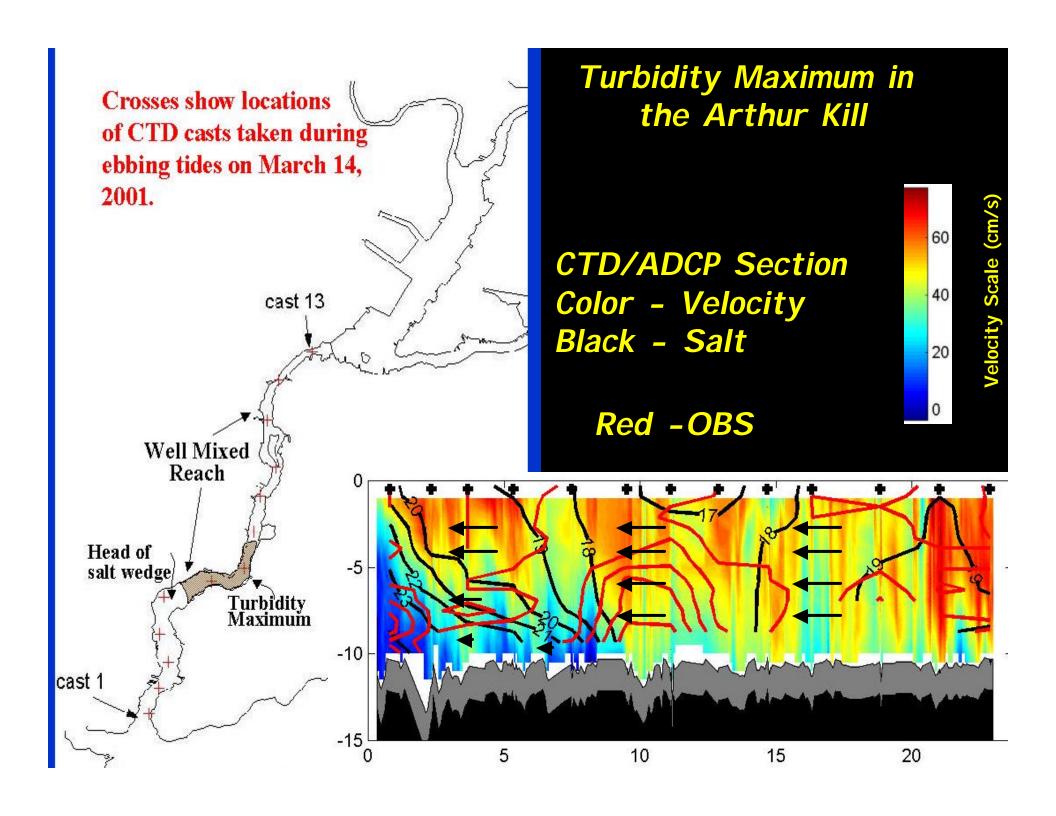


Run 3 Converging mean flow + tide

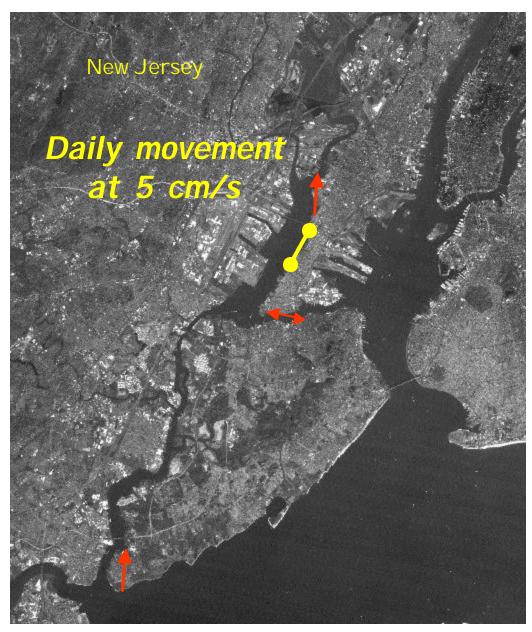
Run 4 Converging mean flow + tide







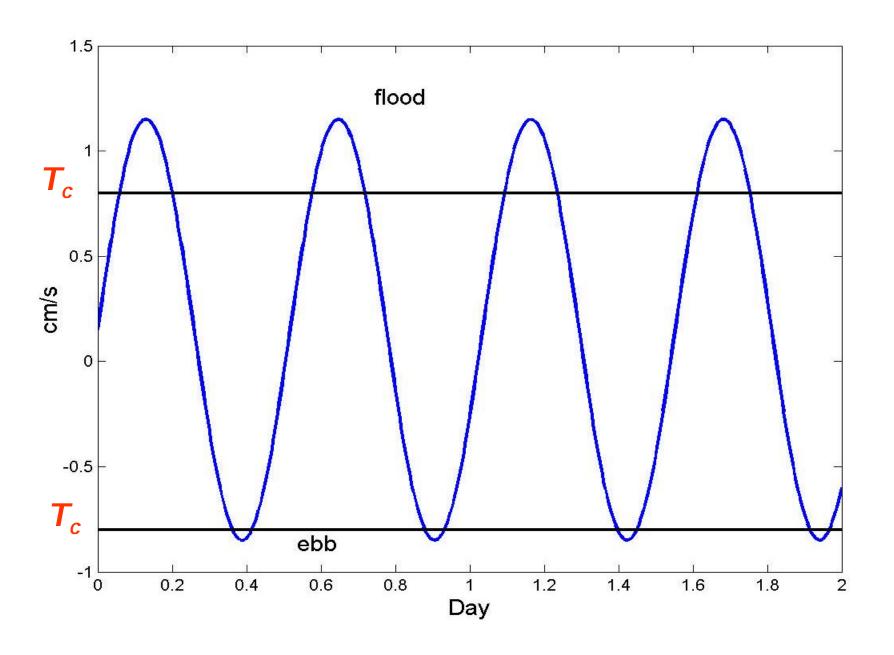
Schematic of the Bottom Mean Flow



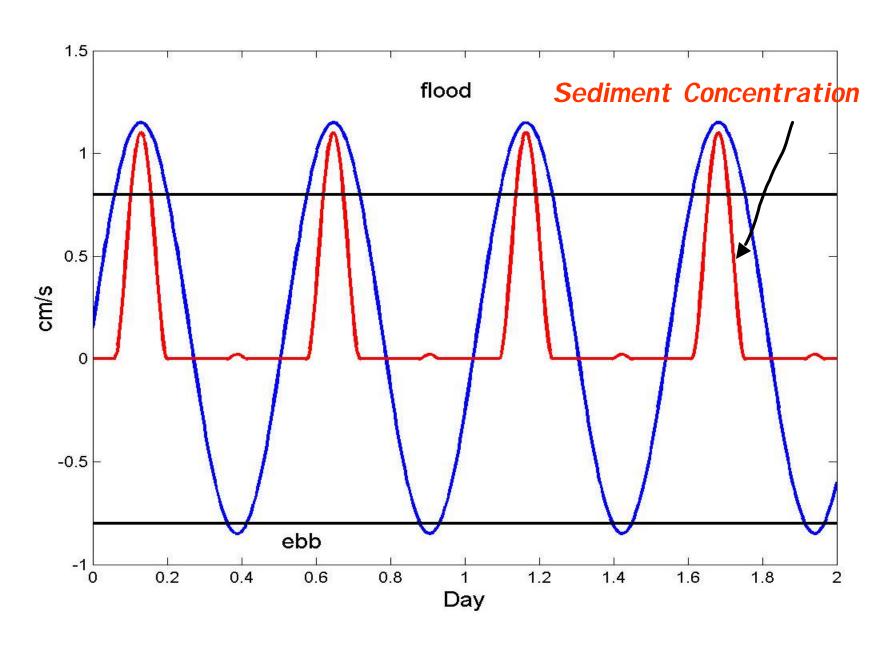
..... may reflect sediment/contaminant transport

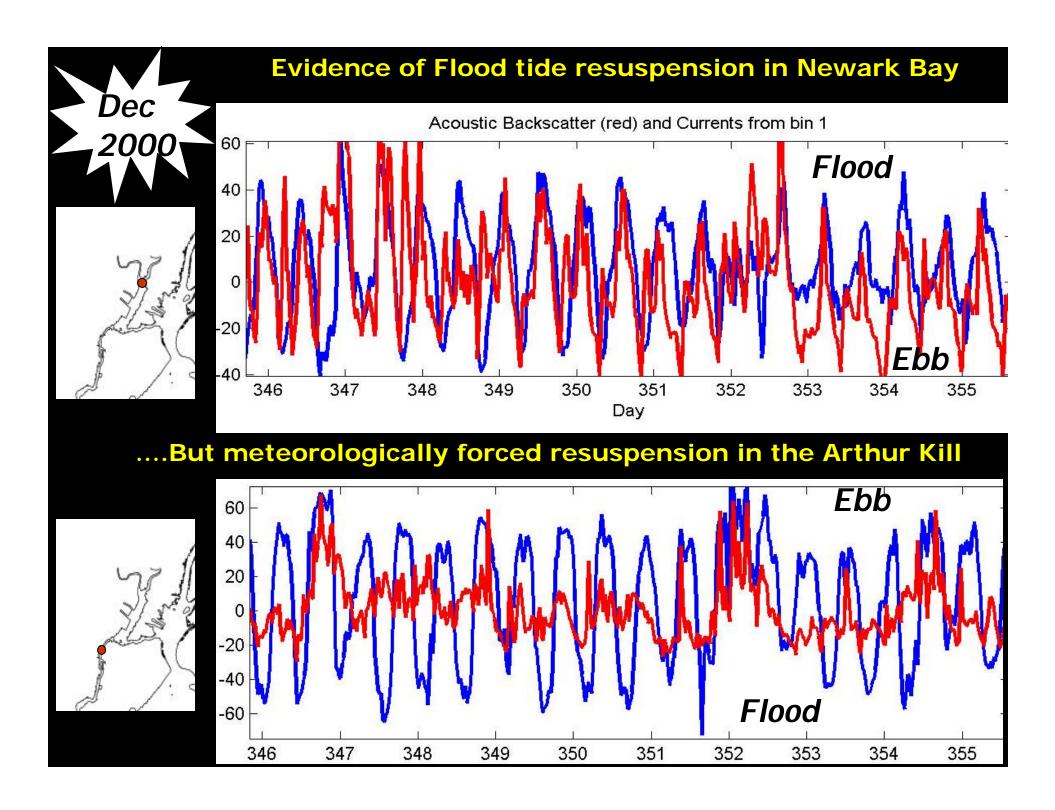
Tidal Effects

T_c =Critical threshold for sediment resuspension

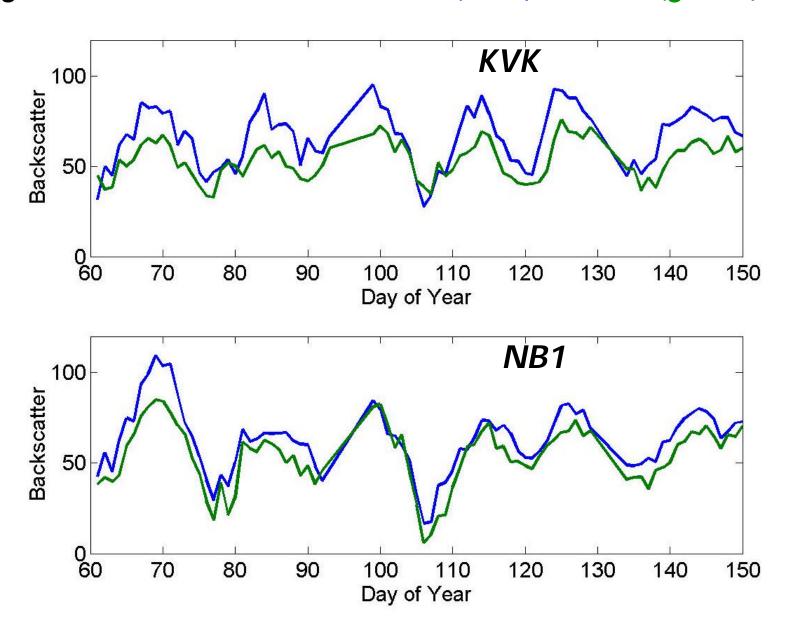


Sediment Resuspension = (Uexcess)²



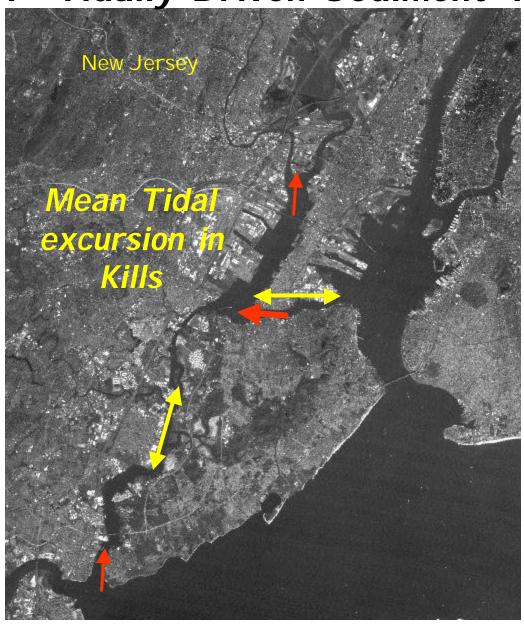


Average backscatter on the flood (blue) & ebb (green) tide



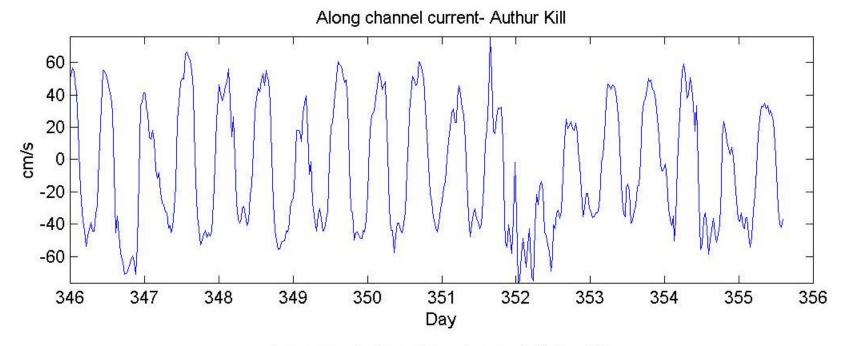
Schematic of Tidally Driven Sediment Transport

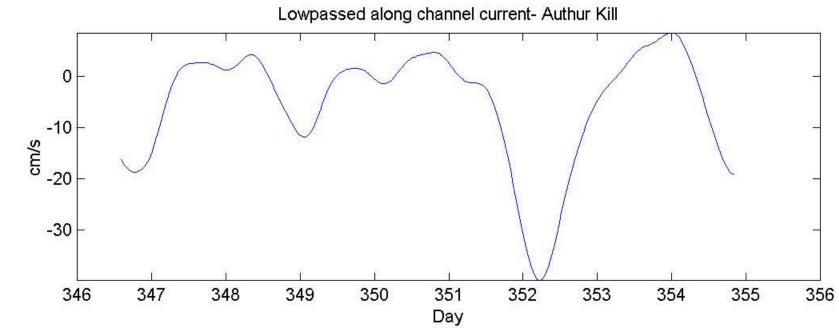
Tends to Augment Mean flow sediment transport.

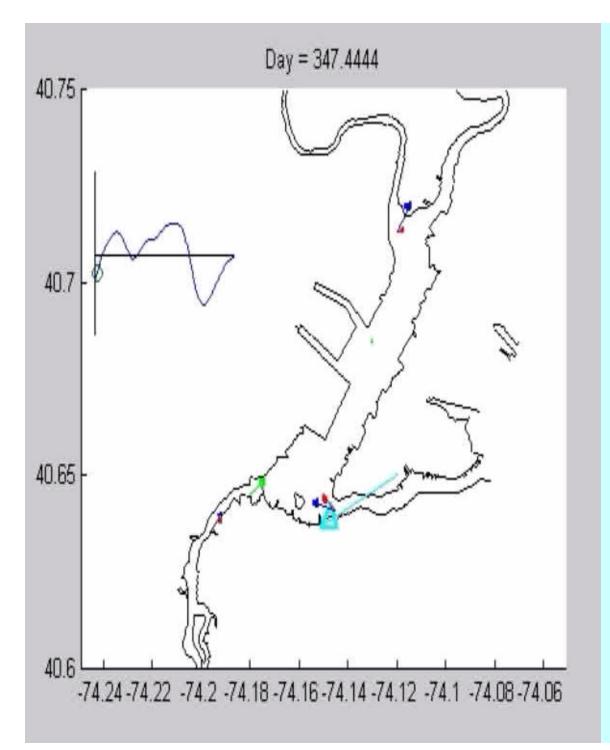


Pattern Enhanced during high river flow

Meteorological Effects







Dec 2000

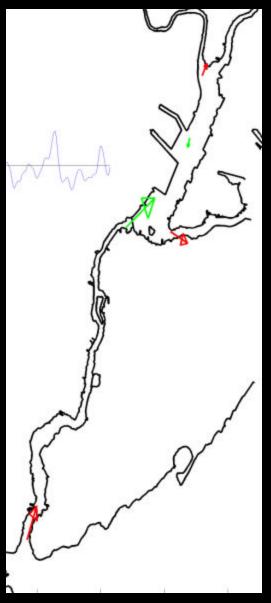
Meteorologically forced flow-through flushing event in the KVK and Arthur Kill

Two modes of meteorologically forced flows in the Kills



Emptying/filling mode Day 81

Flow through Mode Day 63



Flow pattern following passage of low



...may reflect transport associated with episodic events

Summary and Preliminary Conclusions

- 1) Tidally Mean Flows
 - Persistent 2-layer at Newark Bay 1
 - ·Influenced by meteorological forcing in the Kills
 - Weak in the KVK
- 2) Tidal period motion traps sediment in Newark Bay
 - Enhanced with river discharge
 - Tends to augment mean flow
 - Important in KVK
- 3) Turbidity maximum in Arthur Kill
- 4) Meteorological effects significant in Kills